than strengthening cells: ducts (.030-.060 mm.) sometimes wanting: leaves 1 in. long.

In the northern States.

30. **P. pungens** Michx. may be looked for here.

* * Ducts always internal: bundle-sheath thin-walled.

37. **P. palustris** Miller. Cells of thin-walled layer generally much smaller than those of the epidermis: strengthening cells mostly on ventral side of fibro-vascular region: ducts variable in size (.040-.050 mm.), with few strengthening cells: leaves 10-15 in. long.

P. australis Mx.

Virginia to Texas.

38. **P. Cubensis** Griseb. Cells of thin-walled layer large, often equalling those of the epidermis: strengthening cells about as large as epidermal, mostly but one layer; sometimes more in the angles, and even extending to the ducts; none about the ducts nor in fibro-vascular region: ducts variable in size (.050-.080 mm.), often with accessory parenchymatous ones: fibro-vascular bundles but little separated, often blended: leaves 7-12 in. long.

P. Elliottii Engelm.

South Carolina and Florida.

NOTE.—We would be pleased to receive from our friends specimens for identification, as doubtless a wider range of forms will lead to some modifications.

BRIEFER ARTICLES.

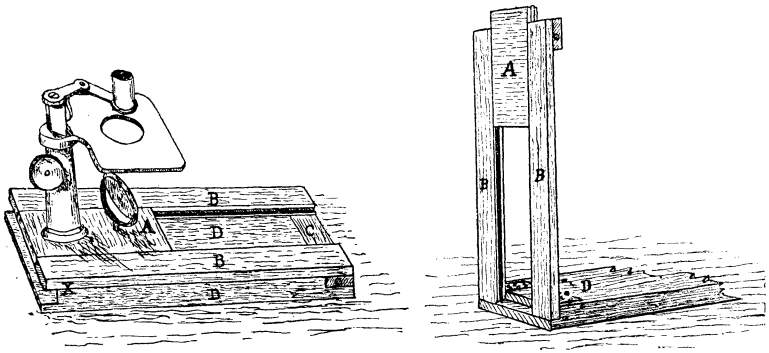
A case of teratology.—It is not always that the continuity of the leaf-spiral can be readily demonstrated with opposite or whorled leaves. Teratology sometimes helps us out. A stem of the garden valerian, Valeriana officinalis, was lately found which had grown to several times the usual diameter and become much shortened and spirally twisted. Where the tissues of the stem were nearly horizontal the leaf-spiral was nearly vertical and the leaves were inserted vertically with their buds at the side. The twisting, as is common with monstrous formations of the stem, was confined to the single axis.

A. A. CROZIER.

Puccinia Malvacearum Mont. in Massachusetts.—I have recently received some leaves of hollyhock from the garden of Prof. C. L. Jackson, at Beverly, Mass., which were attacked by the true Puccinia Malvacearum common in many parts of Europe. In all respects the leaves attacked resemble

those which I have examined from Europe, and differ from those which I found in California, of which a notice was published in the BOTANICAL GAZETTE of September, 1885, in having isolated, light yellow sori instead of the aggregated, or somewhat concentric, and dark brown, almost black sori found in the affected hollyhocks of Santa Barbara. The fungus from Beverly is of interest not only because very little is known of the occurrence of P. Malvacearum in the Eastern States, but also because in this case we have an accurate record of the advent of the fungus. The disease was unknown at Beverly until the present year, and was imported with some seeds of Malope from Europe last season. At present the disease is confined to the Malope and hollyhocks of Prof. Jackson's garden and that of one of his neighbors, other gardens being free from the disease. W. G. FARLOW.

Making drawings with a dissecting microscope.—The apparatus consists of a Zentmayer's dissecting microscope, the Rothrock model, the round metal base being replaced by a wooden one, which is made as follows: A heavy board (D in figure) 6×12 inches, having a shoulder cut at each end, forms the ground work; to this are hinged on either side at X, the two strips B B, each 1½×12 in. and grooved on their inner edges; these are bound together by the strip C; between the strips B B is placed the piece marked A, which is tongued to fit the groves. Two holes are made in A, one to receive the screw at the base of the microscope, the other for the attachment of the mirror. When the object is prepared for drawing, A is carried forward to C, and then raised with B B into a position at right angles with D, the weight of the microscope and the shoulder at the end of D keep this portion in position.



A Wollaston's camera lucida is now placed over or rather back of the lens and the object drawn in the usual way.

The lenses used are a one inch and a one-half inch achromatic triplets having special adapters for fitting into the arms of the microscope stand and for receiving the camera lucida. Mr. Zentmayer has made these fittings or adapters under my direction, and modified the mounting of the camera slightly, making it more convenient for use than in its usual form.